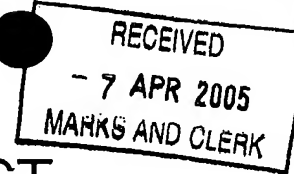


PATENT COOPERATION TREATY



From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

LIND, Robert  
MARKS & CLERK  
4220 Nash Court  
Oxford Business Park South  
Oxford OX4 2RU  
GRANDE BRETAGNE

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Date of mailing (day/month/year)	05.04.2005
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Applicant's or agent's file reference RL.P52328WO		<b>IMPORTANT NOTIFICATION</b>	
International application No. PCT/GB 03/04828	International filing date (day/month/year) 06.11.2003	Priority date (day/month/year) 06.11.2002	
Applicant TOUMAZ TECHNOLOGY LIMITED et al.			



1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).



Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

<p>Name and mailing address of the international preliminary examining authority:</p> <p> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465</p>	<p>Authorized Officer</p> <p>Louca-Dreher, C</p> <p>Tel. +49 89 2399-7264</p> <p></p>
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**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference RL.P52328WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/04828	International filing date ( <i>day/month/year</i> ) 06.11.2003	Priority date ( <i>day/month/year</i> ) 06.11.2002
International Patent Classification (IPC) or both national classification and IPC H03M1/00		
Applicant TOUMAZ TECHNOLOGY LIMITED et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"><li>I <input checked="" type="checkbox"/> Basis of the opinion</li><li>II <input type="checkbox"/> Priority</li><li>III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li><li>IV <input type="checkbox"/> Lack of unity of invention</li><li>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li><li>VI <input type="checkbox"/> Certain documents cited</li><li>VII <input type="checkbox"/> Certain defects in the international application</li><li>VIII <input type="checkbox"/> Certain observations on the international application</li></ul>		
Date of submission of the demand  26.05.2004	Date of completion of this report  05.04.2005	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Nicolaucig, A  Telephone No. +49 89 2399-7670  	

INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

International application No. PCT/GB 03/04828

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*;

## Description, Pages

1-25 as originally filed

## Claims, Numbers

10-17 as originally filed

1-9 received on 21.02.2005 with letter of 18.02.2005

## Drawings, Sheets

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB 03/04828

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 6-17

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 6-17

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	2-4
	No: Claims	1, 5
Inventive step (IS)	Yes: Claims	
	No: Claims	1-5
Industrial applicability (IA)	Yes: Claims	1-5
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB 03/04828

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

- 1 Since claims 6-17 relate to inventions in respect of which no international search report has been established, they have not been the subject of international preliminary examination (Rule 66.1 (e)).

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- 2 Of the documents cited in the International Search Report, the following are referred to:

D1: EP 0 439 623 A

D2: JP 58 060 821 A

- 3 The application does not meet the requirements of Article 33(1) PCT because the subject-matter of claims 1 and 5 is not novel in the sense of Article 33(2) and the subject-matter of claims 1-5 does not involve an inventive step in the sense of Article 33(3), as explained below.

- 3.1 Document D1 discloses (the references in parentheses applying to this document):

an apparatus (fig. 3) for converting an M-bit digital signal (DATA) into an analogue signal (OUT), the apparatus comprising:

means (9, 11) for mapping the M-bit signal (DATA) to first and second digital values u and v, so that the ratio of u/v to the maximum value of u/v approximates the ratio of the M-bit digital signal to the maximum value of that signal (see below for more details);

first and second digital to analogue converters (4, 5),

the first digital to analogue converter (4) having an input for receiving said first digital value u and

the second digital to analogue converter (5) having an input for receiving said second digital value v ; and

circuit means (3) coupled to the analogue outputs of the digital to analogue converters for dividing one of the analogue outputs by the other, and for providing the output result (OUT).

Indeed, it shall be noted that:

a 16-bit digital input signal N (e.g. the binary number  $N = "0010'1011'0111'1101"$ , as in the example of col. 6, l. 4-29) is mapped to digital values u and v, where:

u consists of the 12 most significant bits of N excluding the leading "0"s (e.g.  $u = "1010'1101'1111"$ , col. 4, l. 49-55 and col. 6, l. 9-11, 20-24) and is represented in digital form in shift register 9;

v is the magnitude of the digital input signal (col. 4, l. 58 - col. 5, l. 10), having value 1 for no leading zeros, 2 for one leading zeros, 4 for two leading zeros, 8 for three leading zeros and 16 for four or more leading zeros; it is represented in digital form in shift register 11 (col. 6, l. 7-9);

the ratio of u/v to the maximum value of u/v (e.g.  $( "1010'1101'1111" / 4 ) / ( "1111'1111'1111" / 1 )$ ) approximates the ratio of N to the maximum value of N (e.g.  $"0010'1011'0111'1101" / "1111'1111'1111'1111"$ );

u is converted to an analogue signal, i.e. the total current through input resistor network 4, proportional to u (col. 6, l. 20-24);

v is converted to an analogue signal, i.e. the conductance of the feedback resistor network 5, proportional to v (col. 5, l. 5-10, col. 6, l. 24-29);

the operational amplifier 3 performs the division of the two analogue signals

providing an output signal, i.e. the voltage at terminal OUT, as result of the division of said current by said conductance.

The subject-matter of claim 1 is therefore not novel.

- 3.2 The same arguments apply mutatis mutandis to corresponding method claim 5.
- 3.3 Claims 1 and 5 are not novel also with respect to D2 (see in particular fig. 3-4).
- 3.4 Dependent claims 2-4 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, the reasons being as follows:
- 3.4.1 The additional feature of claim 2 of equal length for first and second digital values is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill.
- 3.4.2 The additional feature of claim 3 of comprising a look-up table to implement the mapping function that in D1 is performed by logic circuits 9-13 is a matter of normal design procedure. Indeed, it is well known to the person skilled in the art that the two implementations are equivalent. Its inclusion in the apparatus described in document D1 would therefore be an obvious design possibility.
- 3.4.3 The additional feature of claim 4 of comprising means for compressing the input signal by a factor and means for scaling the output signal by the same factor is a matter of normal design procedure in the field of digital-to-analogue converters. Its inclusion in the apparatus described in document D1 would therefore be an obvious design possibility for the skilled person.